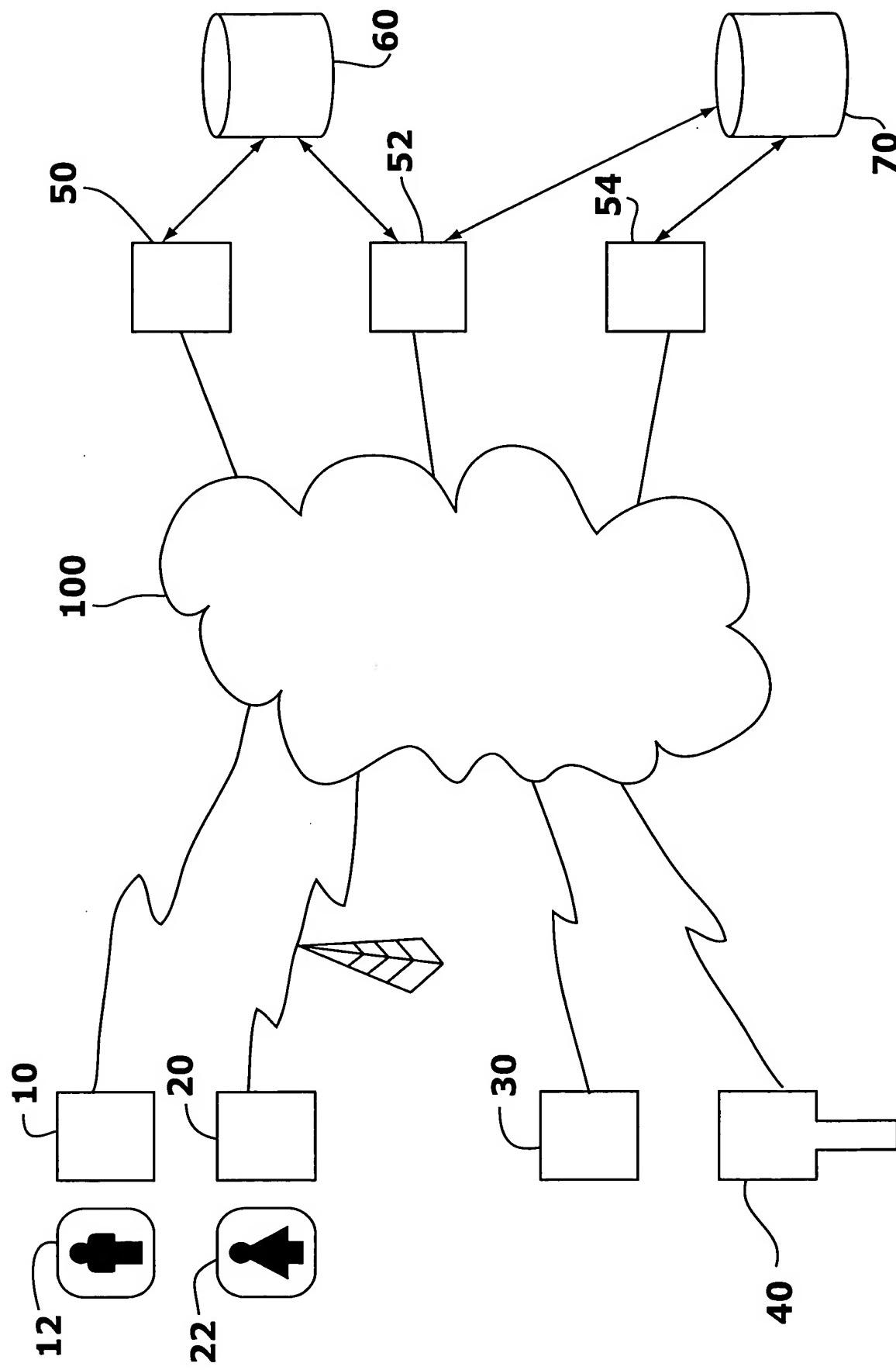




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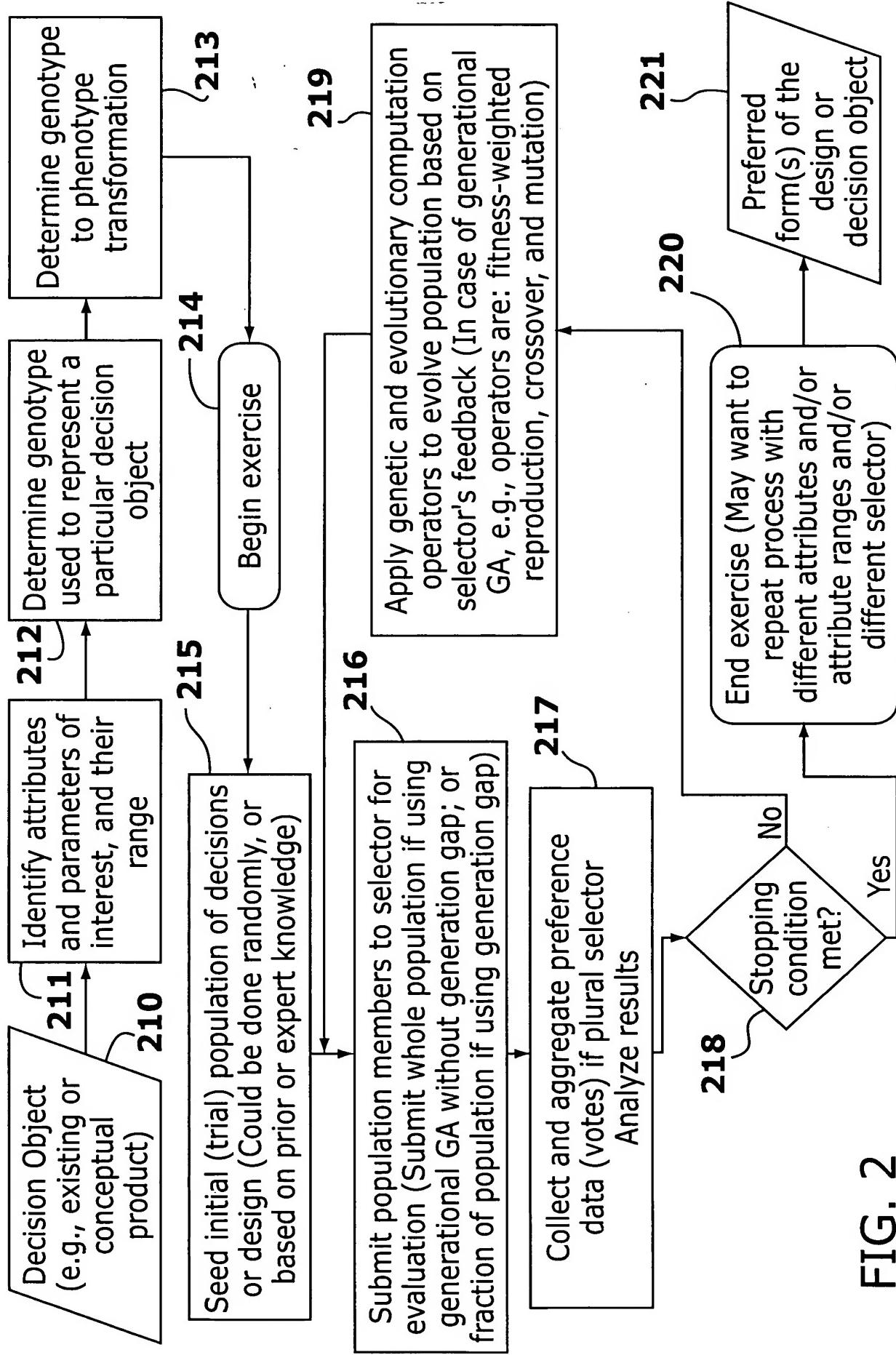
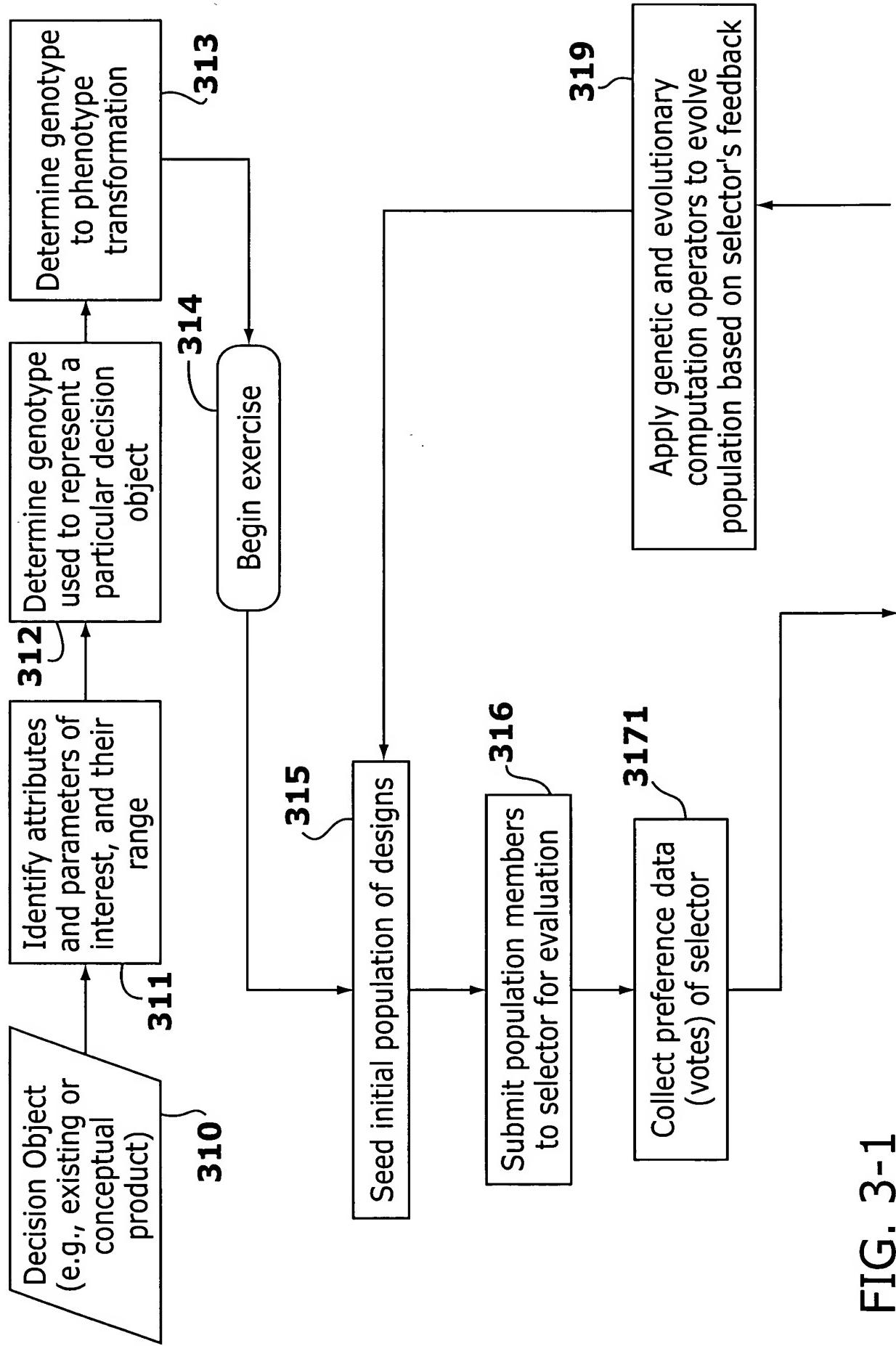


FIG. 2



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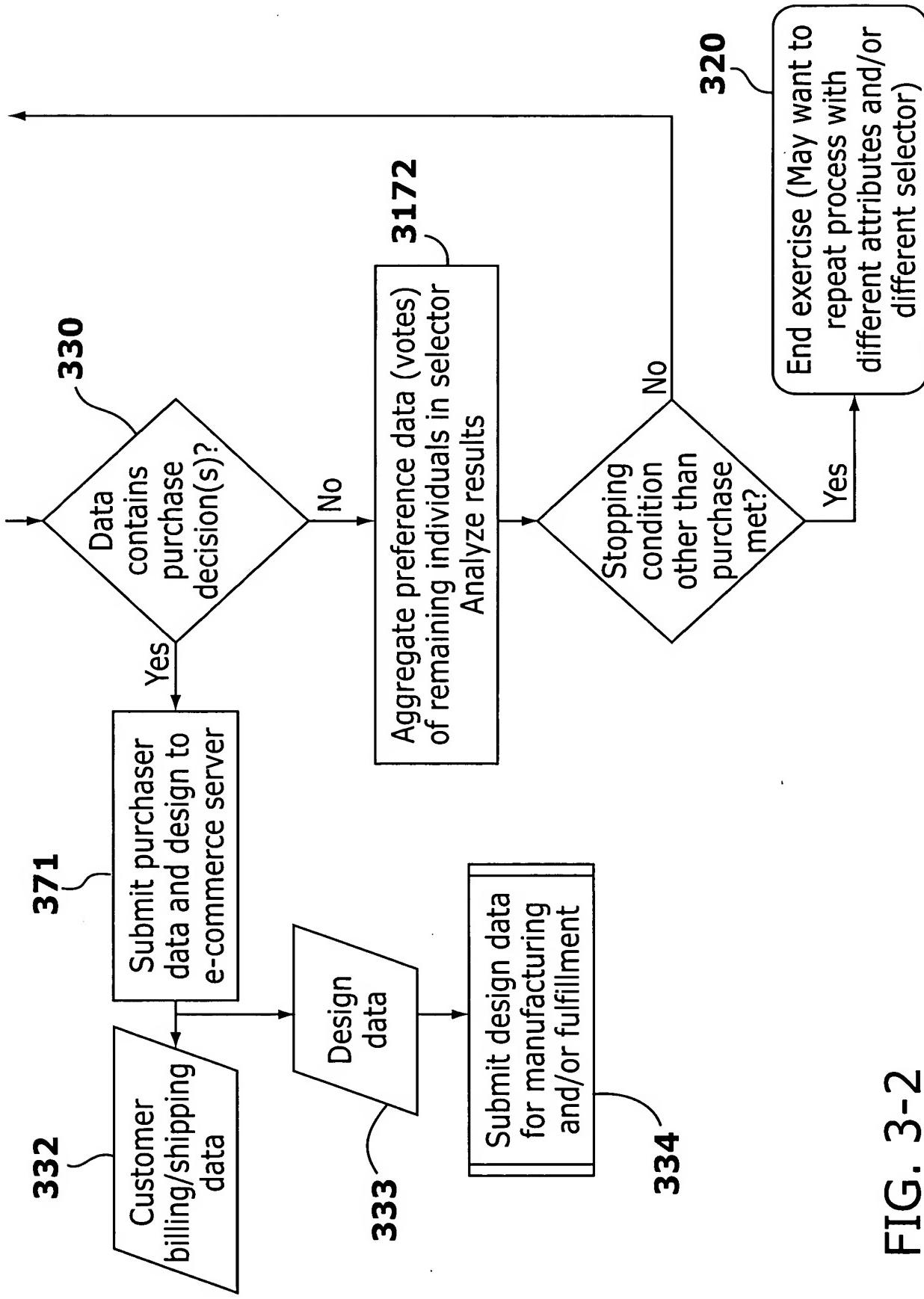


FIG. 3-2



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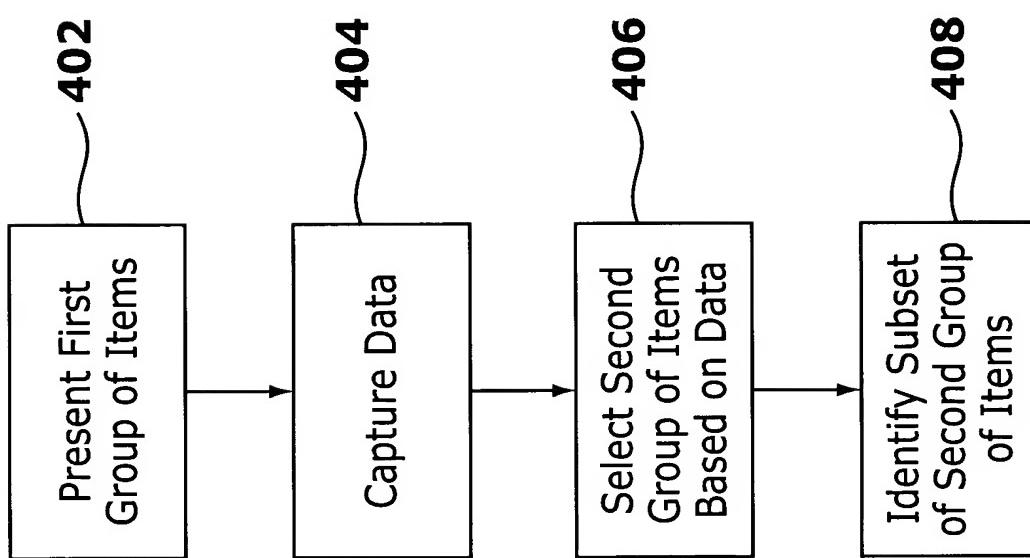


FIG. 4



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Generational IGA with Speciation and Niching

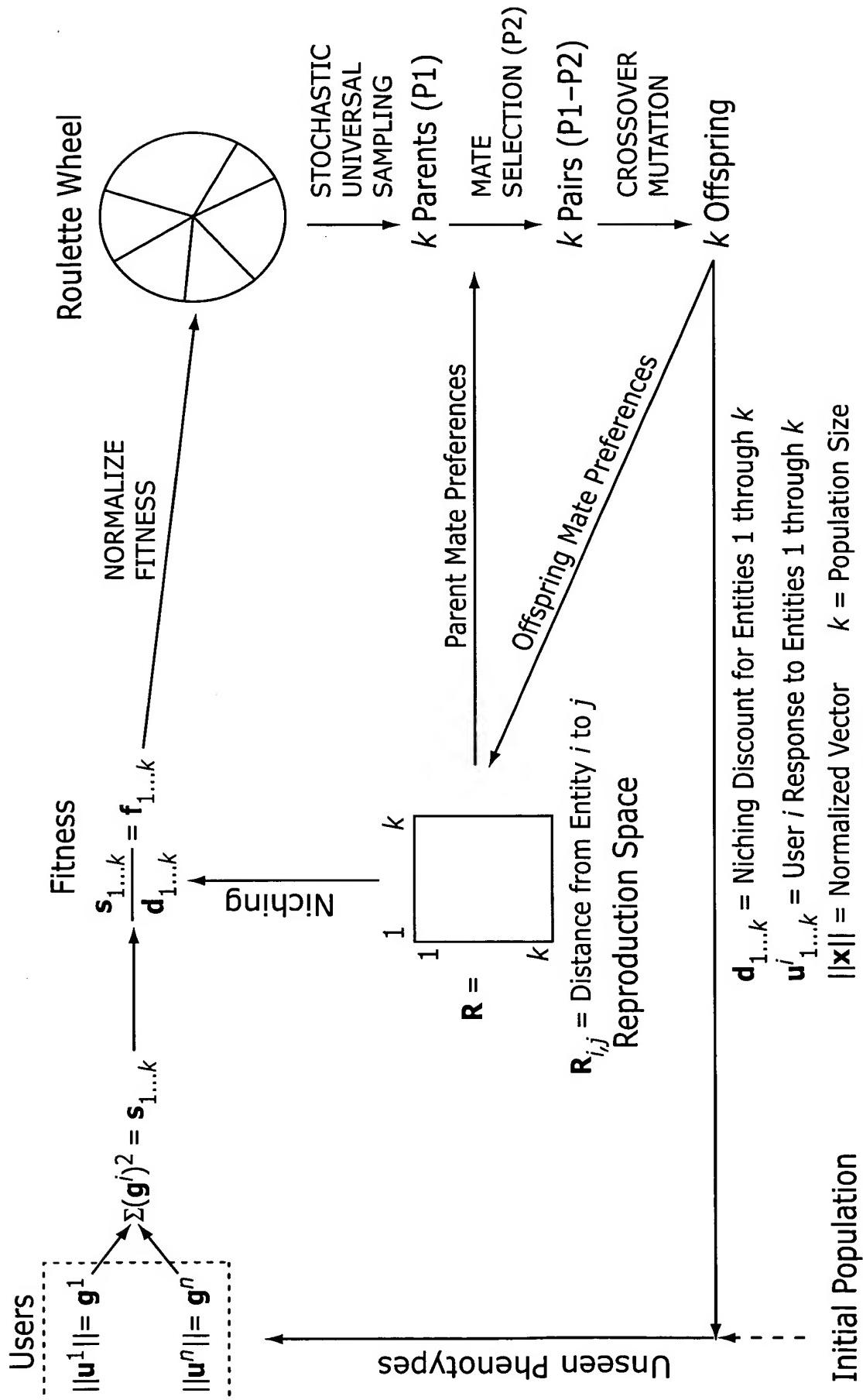


FIG. 4A



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Computation of Mating Probabilities

$$\mathbf{R} = \begin{bmatrix} & & k \\ 1 & & \\ & & k \end{bmatrix}$$

$\mathbf{R}_{i,j}$ = Distance from Entity i to j in reproduction space

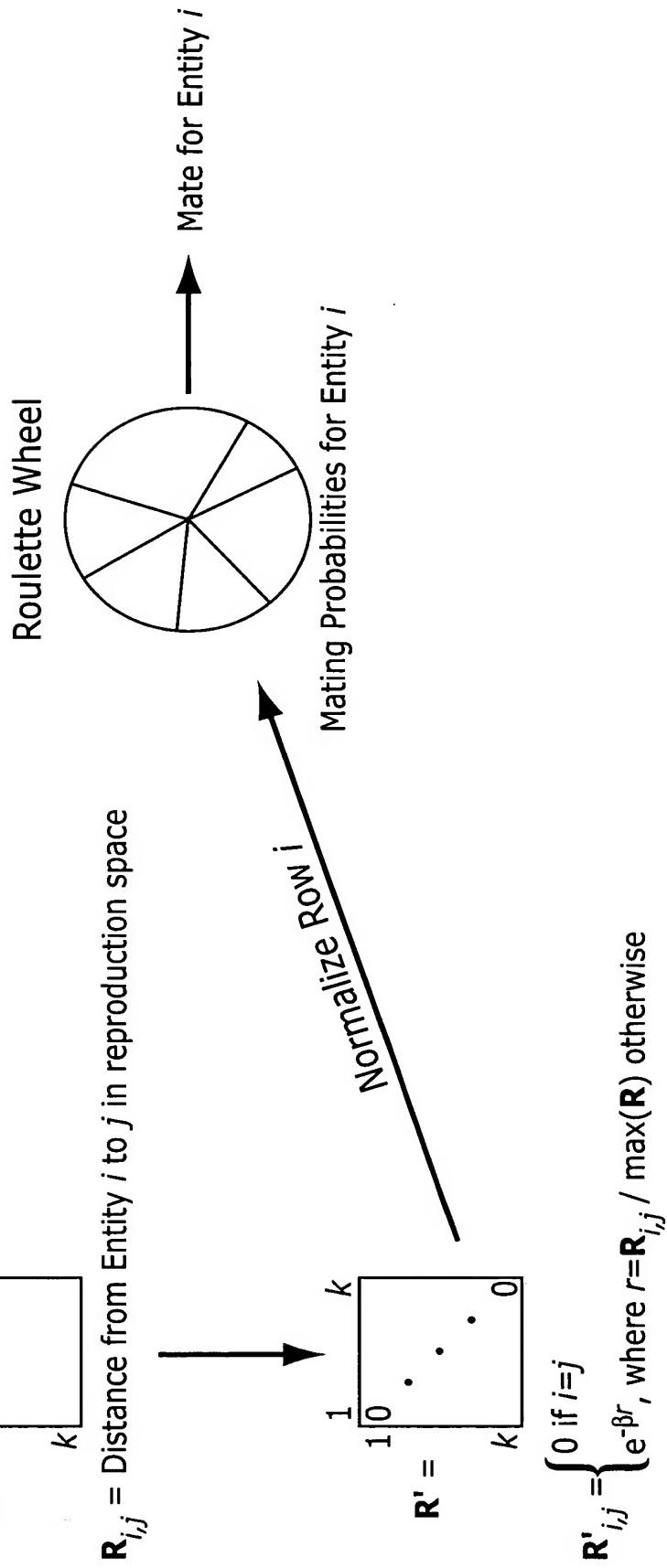


FIG. 4B



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Computation of Niching (Sharing) Discount

$$\mathbf{R} = \begin{bmatrix} & & k \\ 1 & & \\ & & k \end{bmatrix}$$

$\mathbf{R}_{i,j}$ = Distance from Entity i to j in reproduction space

$$\mathbf{R}' = \begin{bmatrix} & & k \\ 1 & \cdot & \\ 1 & \cdot & \cdot \\ & \ddots & \ddots \\ k & & 1 \end{bmatrix}$$

$\Sigma_j \mathbf{R}'_{i,j} = d_i$

Niching discount for Entity i

$$\mathbf{R}'_{i,j} = \max\left(\frac{-1}{s_{thresh}} \frac{\mathbf{R}_{i,j}}{\max(\mathbf{R})} + 1, 0\right)$$

where $s_{thresh} \in [0,1]$

FIG. 4C



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500

Affinnova - Registration

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BECOME A MEMBER!
Create your FREE Affinnova account below

*Required fields

*EMAIL Address:

*Password: 504

*Confirm Password: 510

Gender: Male 512

Age: 30-34 514

*Country: Please choose country

*ZIP Code (US Only): - 506

Household Income: Please choose income

Send email to remind me to vote:

Send email to update me on Affinnova: 516

Automatically log me in: 520

522

524

FIG. 5



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Vote On	Voters	Votes
<u>Polo Shirt</u>	0	0
<u>Affinnova TShirt</u>	1	204
<u>Apparel Demo</u>	0	0
<u>Demo</u>	0	0
<u>Demo</u> <u>-No Color</u>	0	0
<u>Demo</u> <u>-No</u> <u>Color, Reverse</u> <u>Width Genes</u>	3	2040

FIG. 6



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Affinova - Voting



702 - 704

I agree

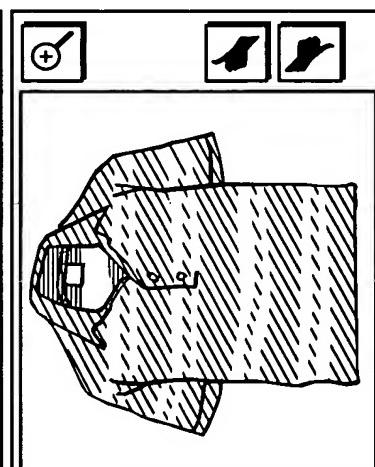
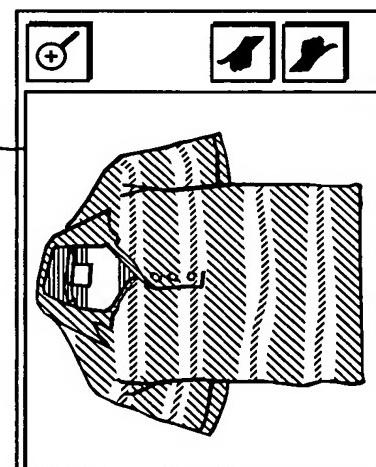
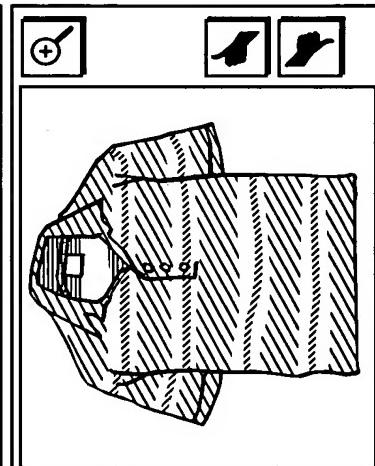
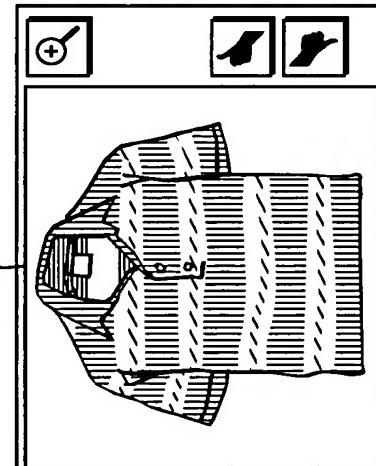
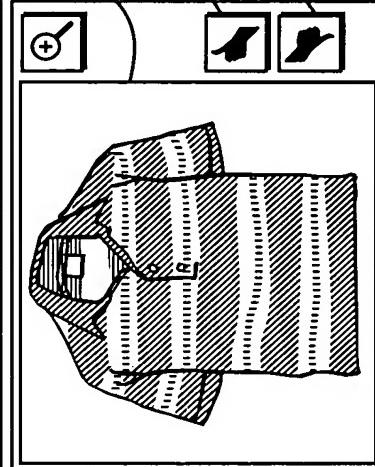
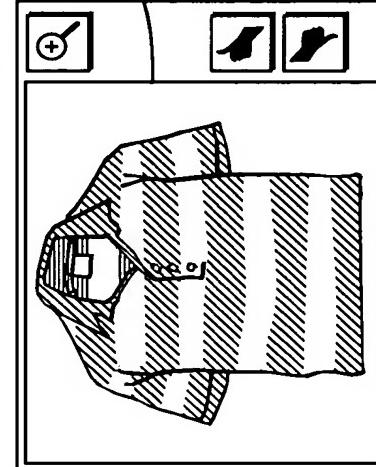
700

706

712

733

22



Stats	Session	You	Overall
Viewed	0	0	0
ThumbsUp	0	0	0
Voters	N/A	N/A	N/A

Vote

710

Stats	Session	You	Overall
Viewed	0	0	0
ThumbsUp	0	0	0
Voters	N/A	N/A	0

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04

[Logout](#)

700

706

712

730

Vote

710

708

Stats	Session	You	Overall
Viewed	0	0	0
ThumbsUp	0	0	0
Voters	N/A	N/A	0

Viewed
Thumbsup
Voters

Stats
Viewed

000
00 N/A

708

FIG. 7A



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Stats Session You Overall

	Viewed	42	42	42
ThumbsUp	2	2	2	2
Voters	N/A	N/A	N/A	1

FIG. 7B



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Marker Exercise



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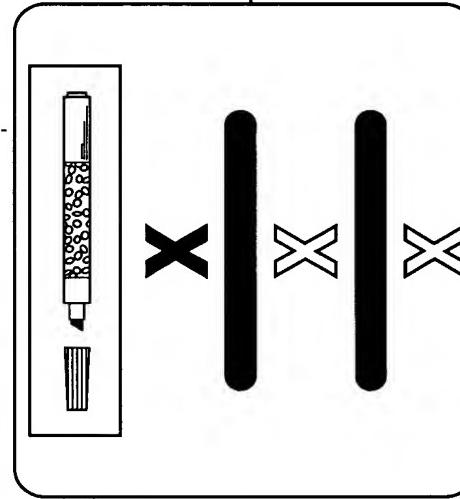
Your Goal:
Create 3 Marker Designs!

After the bar is at 100% we'll suggest a pick for you. You can always remove it and get another pick.

0% 100%

780

788



Your picks are saved automatically to the Idea Station page.



Remove pick and start again.

Get More Markers!

You've seen 1656 marker designs.

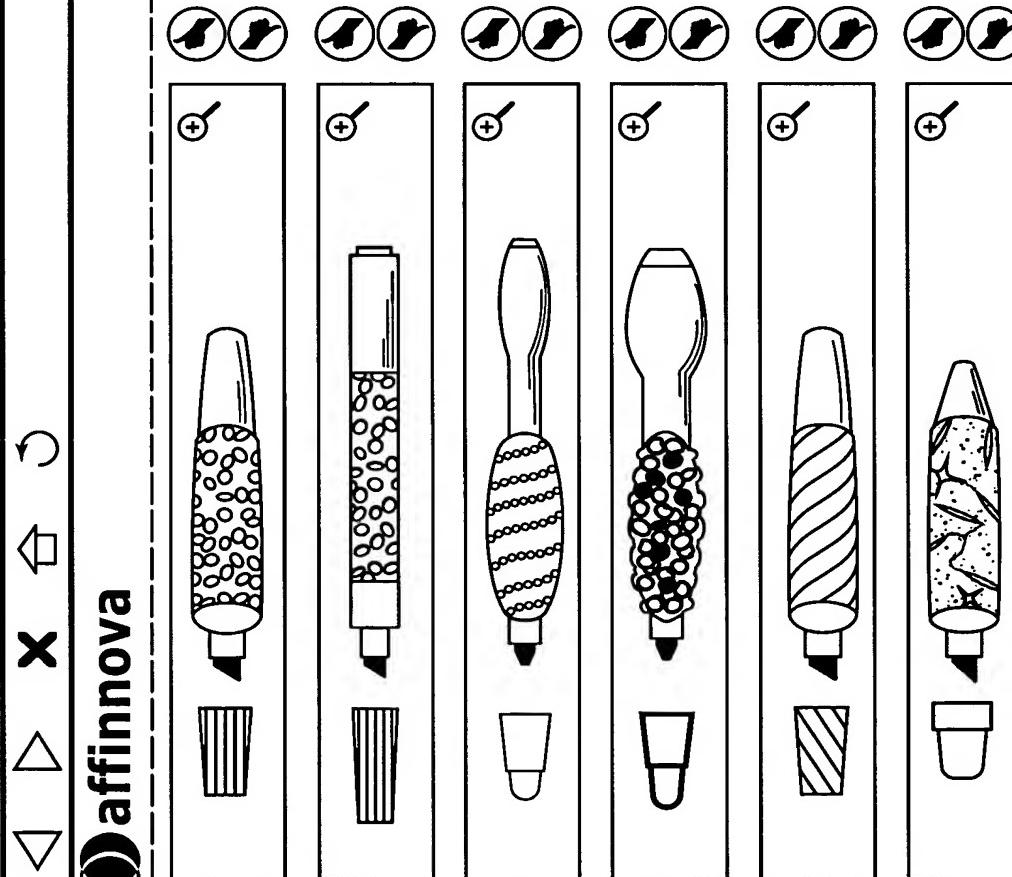


FIG. 7C



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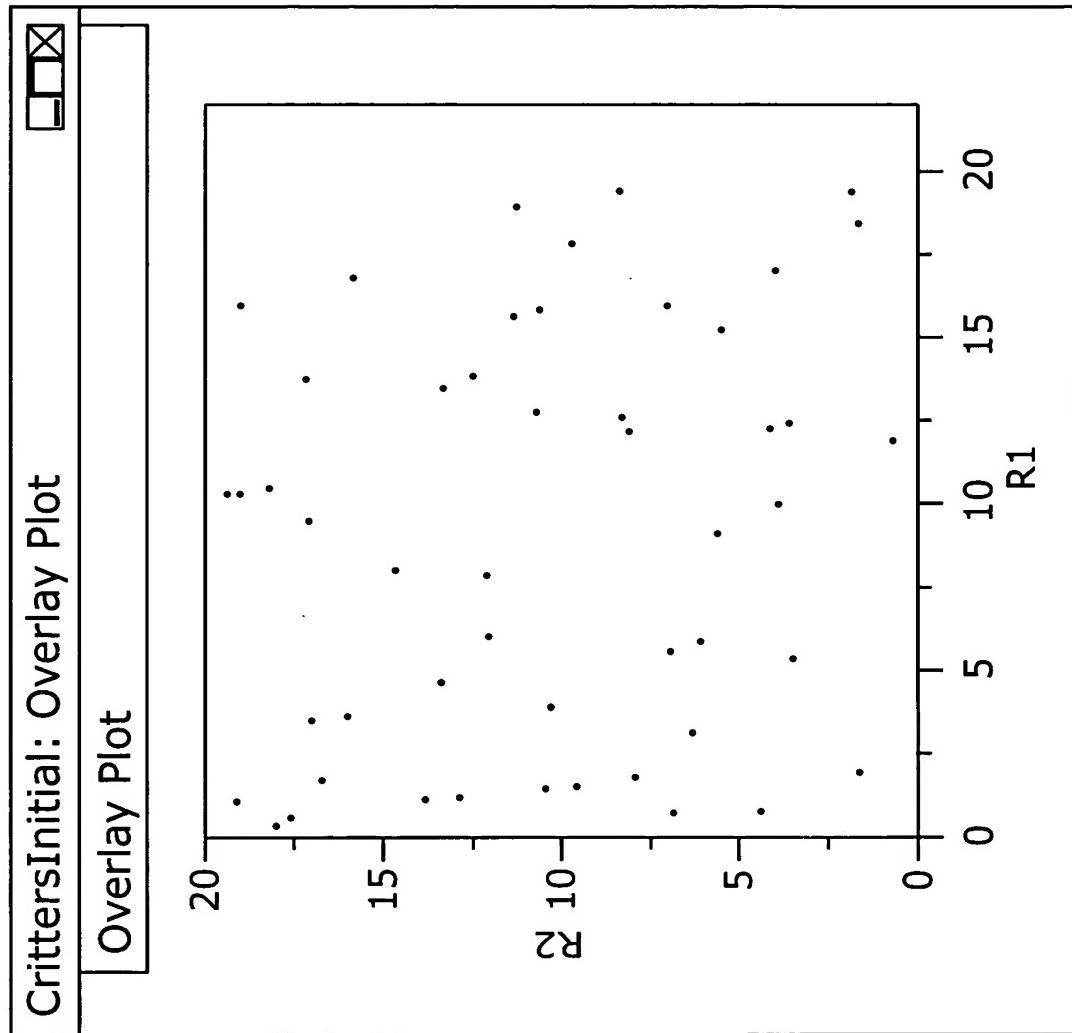


FIG. 8



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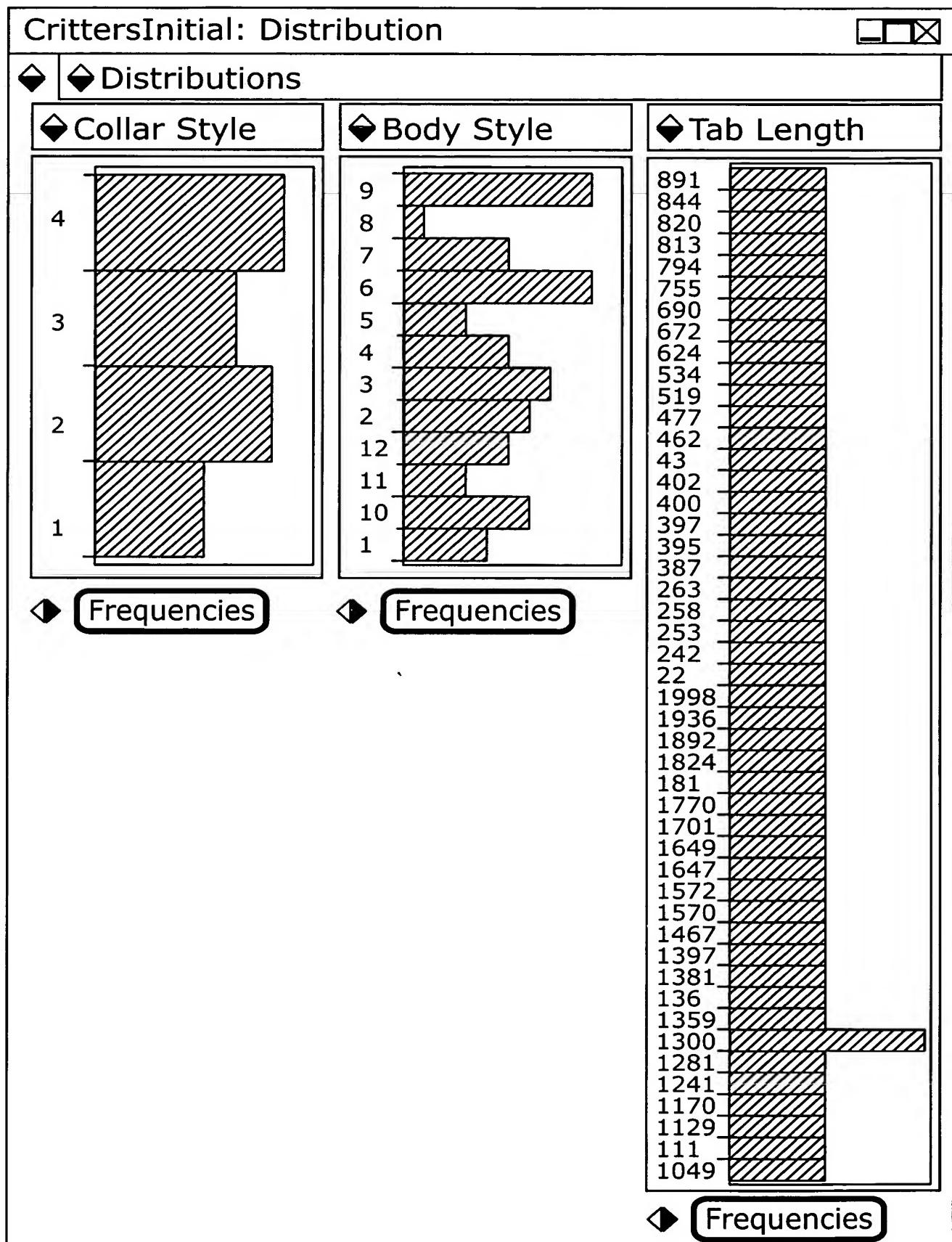


FIG. 9



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FIG. 10

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Logout kmalek@
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Vote

Stats	Session	You	Overall
Viewed	276	276	466
ThumbsUp	69	69	133
Voters	N/A	N/A	2

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Logout kmalek@
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Vote

Stats	Session	You	Overall
Viewed	276	276	466
ThumbsUp	69	69	133
Voters	N/A	N/A	2



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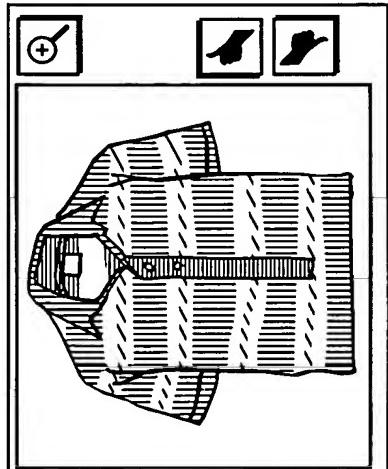
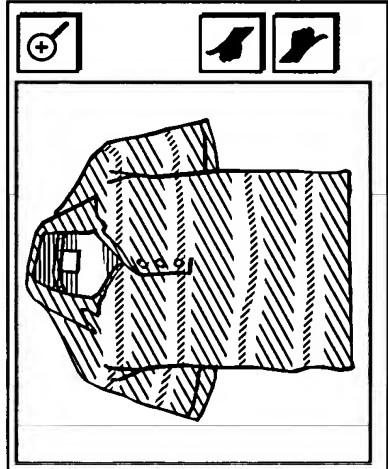
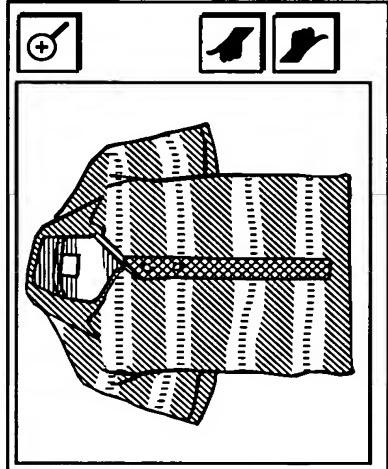
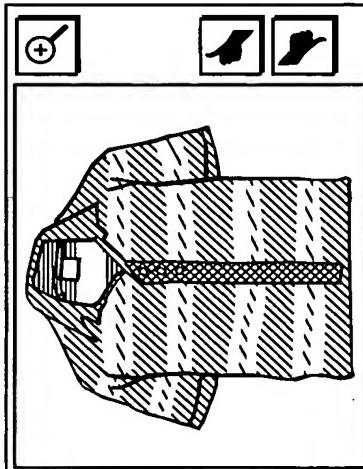
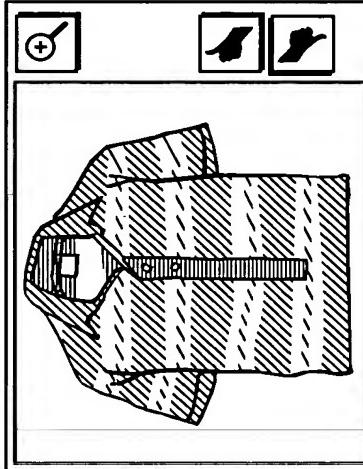
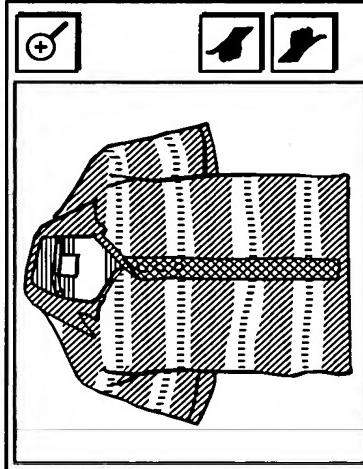
Affinnova - Voting



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Logout



	Session	You	Overall
Viewed	282	282	408
ThumbsUp	69	69	139
Voters	N/A	N/A	2

Vote

FIG. 11



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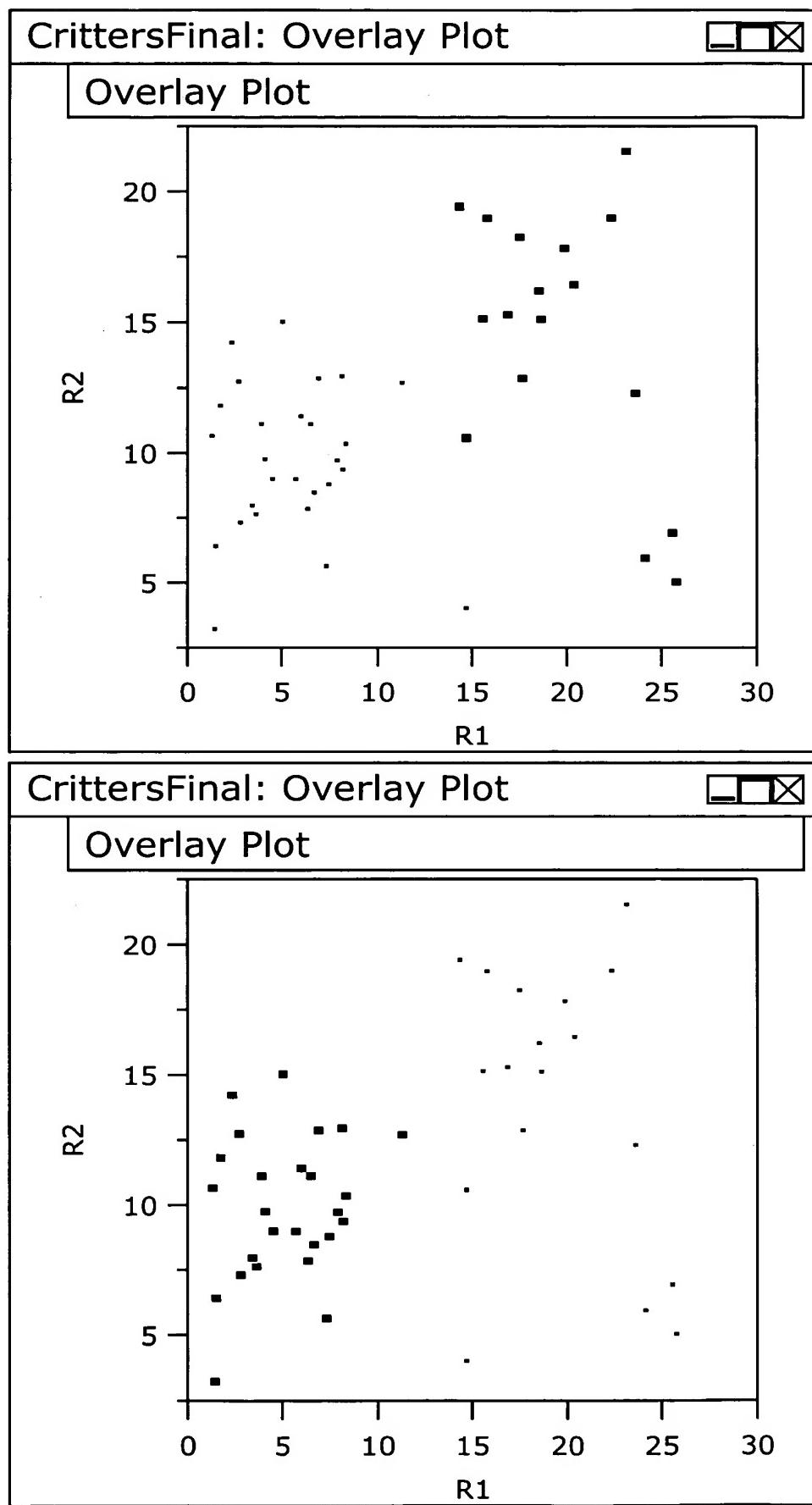


FIG. 12



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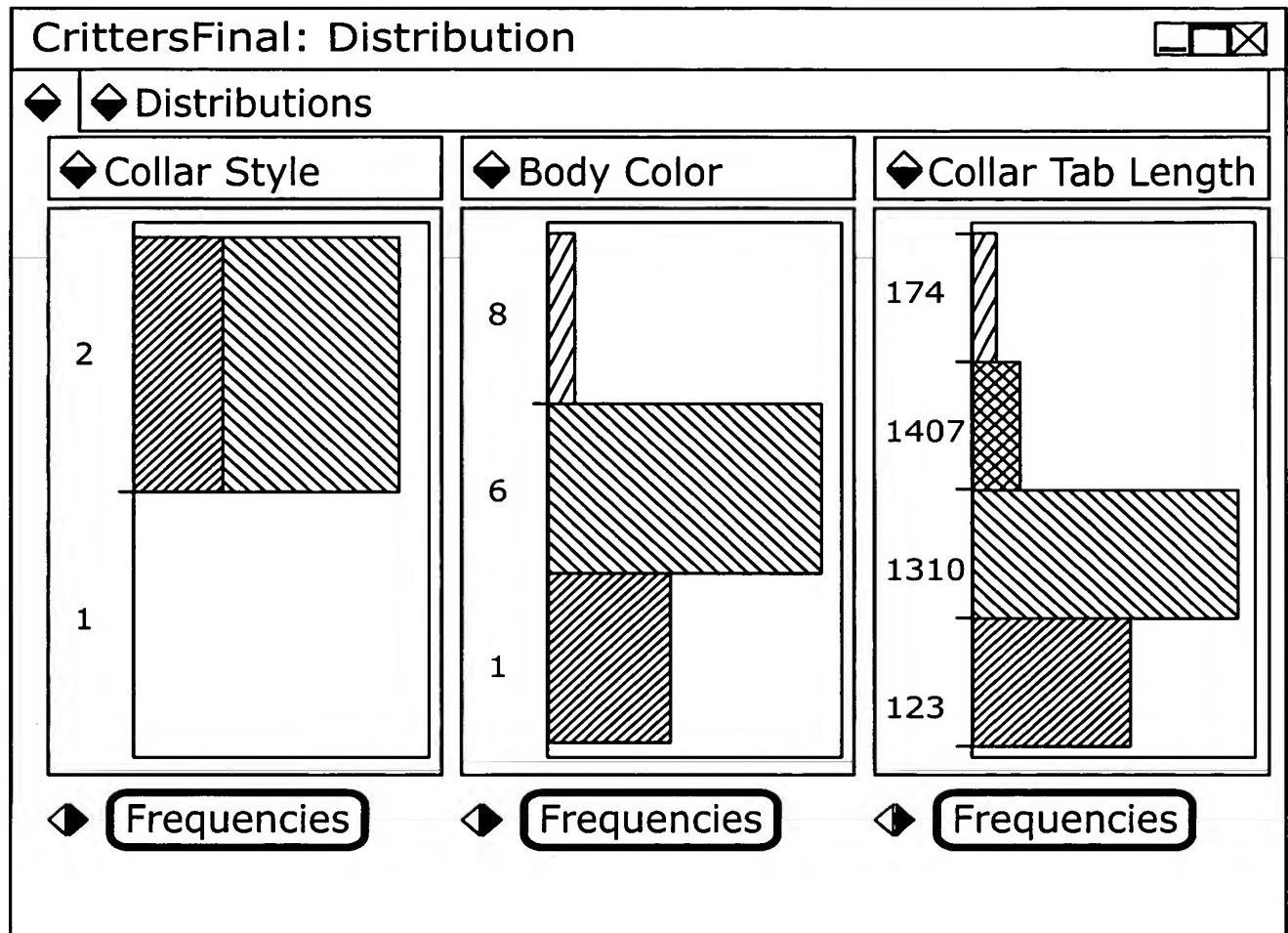


FIG. 13



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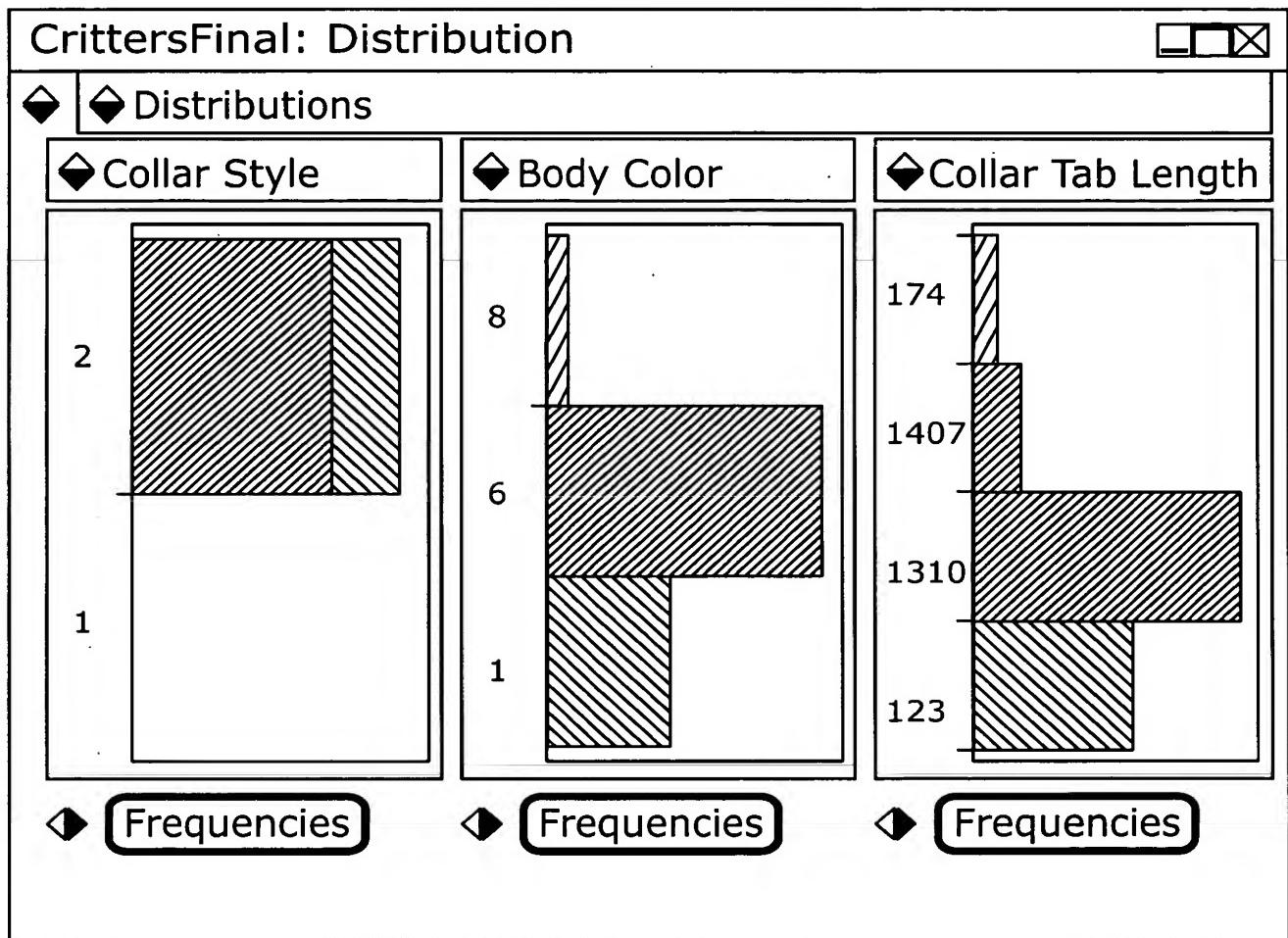


FIG. 14